

REMARKS

Claims 1-6, 11, 15, and 19 have been amended to further patentably distinguish the invention from the prior art. Such claim amendments are only for the purpose of expediting the prosecution of this application and are not to be construed as an abandonment of any of the novel concepts disclosed therein.

The office action states:

Claim Rejections - 35 USC § 103

4. Claims 1, 3-5, 9, 11-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rocha (US PAT. 6,118,883) in view of Markow (US PAT. 6,175,489).

Consider claim 1 Rocha teaches that a method comprising: controlling audio electrical signals to be provided to electroacoustical transducers of an array to achieve reduced cancellation of acoustic signals produced by the transducers at frequencies below $FD = c/2D$ in which D is an inter-transducer distance (because the entire frequency is reduced in acoustic signal canceling and thus includes the frequency range that is below FD and applicant does not point out the limitation below FD only, therefore, it meets the limitation as recited in claimed) and c is the speed of sound, the controlling being done as a function of at least one of a volume control (see fig. 3 (108)) or a detected signal level, the reduction in cancellation changing a radiated acoustic power spectrum of the array at frequencies below FD (see figs. 3-4 and col. 4 line 10-col. 5 line 48); but Rocha does not explicitly teach equalizing the audio electrical signals based on the change in the spectrum.

However, Markow teaches equalizing the audio electrical signals below FD based on the change in the spectrum (because the entire frequency includes the frequency range that is below FD)(see figs. 2-4 and col. 4 line 50-col. 5 line 6 and col. 6 line 35-col. 7 line 67).

Rocha as modified by Markow teaches equalizing the audio electrical signals below FD based on the change in the spectrum.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Markow into Rocha to provide in order to enhance spatial sound impression to the listener.

Consider claims 3-5 Rocha as modified by Markow teaches the method of claim 1 in which the adjusting occurs prior to the controlling (in Markow see col. 6 line 25-col. 7 line 32) and the method which the change in the acoustic power spectrum resulting from the controlling of the signals is predicted, and the adjusting is based on the predicting(in Markow see col. 6 line 25-col. 7 line 32); and the method which the adjusting is based on a volume level selected by a user (in Markow see col. 6 line 25-col. 7 line 32).

Consider claim 9 Rocha teaches the method which the controlling of the audio electrical signals comprises adjusting a level of one of the signals over a limited frequency range(see figs. 3-6 and col. 4 line 10-col. 5 line 48).

Consider claim 11 Rocha teaches electroacoustical transducing apparatus comprising an input terminal to receive an input audio electrical signal(see fig.3), and a plurality of electroacoustical transducers in an array (102,104,106), and circuitry constructed and arranged to generate and control two related output audio electrical signals from the input audio signal, wherein the output signals are coupled to said

electroacoustical transducers of an array, and to achieve reduced cancellation of acoustic signals produced by the transducers at frequencies below $FD = c/2D$ (because the entire frequency is reduced in acoustic signal canceling and thus includes the frequency range that is below FD and applicant does not point out the limitation below FD only, therefore, it meets the limitation as recited in claimed), in which D is an inter-transducer distance and c is the speed of sound, the controlling being done as a function of at least one of a volume control (108) or a detected signal level, the reduction in cancellation changing a radiated acoustic power spectrum of the array at frequencies below FD (see figs. 3-4 and col. 4 line 10-col. 5 line 48); but Rocha does not explicitly teach equalizing the audio electrical signals based on the change in the spectrum.

However, Markow teaches equalizing the audio electrical signals below FD based on the change in the spectrum (because the entire frequency includes the frequency range that is below FD) (see figs. 2-4 and col. 4 line 50-col. 5 line 6 and col. 6 line 35-col. 7 line 67).

Rocha as modified by Markow teaches equalizing the audio electrical signals below FD based on the change in the spectrum.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Markow into Rocha to provide in order to enhance spatial sound impression to the listener.

Claim 15 is essentially similar to Claim 11 and is rejected for the reasons stated above apropos to Claim 11.

Consider claims 12-14 Rocha as modified by Markow teaches the apparatus of which the circuitry comprises a dynamic equalizer (in Markow, reads on 325 microprocessor and see figs. 2-4 and col. 4 line 50-col. 5 line 6 and col. 6 line 35-col. 7 line 67); and the apparatus which the dynamic equalizer includes a pair of signal processing paths and a combiner to combine signals that are processed on the two paths (in Markow, see figs. 2-4 and col. 4 line 50-col. 5 line 6 and col. 6 line 35-col. 7 line 67); and the apparatus which the circuitry is also constructed and arranged to compensate for the change based on a volume level (in Markow, see figs. 2-4 and col. 4 line 50-col. 5 line 6 and col. 6 line 35-col. 7 line 67).

Claim 16 is essentially similar to Claim 12 and is rejected for the reasons stated above apropos to Claim 12.

Claim 17 is essentially similar to Claim 13 and is rejected for the reasons stated above apropos to Claim 13.

Consider claim 19 Rocha teaches a sound system comprising, a source of related electrical signal components (see fig. 3), a pair of electroacoustical transducer arrays, each of the arrays comprising a plurality of electroacoustical transducers driven respectively by said related electrical signal components (102, 104, 106), and an input terminal to receive input audio electrical signals; and circuitry constructed and arranged to generate and control two related output audio electrical signals coupled to said electroacoustical transducers of an array (see fig. 3), to control the two output signals to achieve reduced cancellation of acoustic signals produced by the transducers at frequencies below $FD = c/2D$ (because the entire frequency is reduced in acoustic signal canceling and thus includes the frequency range that is below FD and applicant does not point out the limitation below FD only, therefore, it meets the limitation as recited in claimed), in which D is an inter-transducer distance and c is the speed of sound, the controlling being done as a function of at least one of a volume control (108) or a detected signal level, the reduction in cancellation changing a radiated acoustic power spectrum of the array at frequencies below FD (see figs. 3-4 and col. 4 line 10-col. 5 line 48); but Rocha does not explicitly teach equalizing the audio electrical signals based on

the change in the spectrum.

However, Markow teaches equalizing the audio electrical signals below FD based on the change in the spectrum (because the entire frequency includes the frequency range that is below FD) (see figs. 2-4 and col. 4 line 50-col. 5 line 6 and col. 6 line 35-col. 7 line 67).

Rocha as modified by Markow teaches equalizing the audio electrical signals below FD based on the change in the spectrum.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Markow into Rocha to provide in order to enhance spatial sound impression to the listener.

Consider claim 20 Rocha as modified by Markow teaches the electroacoustical transducing apparatus wherein said array comprises first and second closely spaced loudspeaker drivers having their axes angularly displaced by substantially 60 degrees (in Markow, see figs. 2-4 and col. 6 line 35-col. 7 line 67).

This ground of rejection is respectfully traversed.

In KSR Int'l Co. v. Teleflex Inc., 82 U.S.P.Q. 2d 1385, 1396 (U.S. 2007), after stating the steps “in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent in issue”, the Court said, “To facilitate review this analysis should be made explicit.” See *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) (“[R]ejections on obvious grounds cannot be sustained by mere conclusory statements, instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”).

In *Ex parte Aylward*, (BPA&I, Appeal No. 2007-2368 December 4, 2007) the Board said in reversing a final rejection,

“Both anticipation under §102 and obviousness under §103 are two-step inquiries. The first step in both analyses is a proper construction of the claims The second step in the analysis requires a comparison of the properly constructed claims to the prior art”. *Medichem, S.A. v. Rolabo, SL*, 353 F. 3d 928, 933 (Fed. Cir. 2003) (internal citations omitted);

A. CLAIM CONSTRUCTION

“The Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art.” *In re Lowry* 32 F. 3d 1579, 1582 (Fed. Cir. 1994) (citing *In re Gulack*, 703 F. 2d. 1381, 1385 (Fed. Cir. 1983). Slip Op. Pp. 7-8.

In *Ex parte Hamilton* (BPA&I Appeal No. 2007-3091, March 11, 2008) in reversing a final rejection the Board said:

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See *In re Kahn*, 441 F.3d 977, 987-88 (Fed. Cir. 2006), *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991), and *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

The Examiner can satisfy this burden by showing some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Slip Op. Pp. 5-6.

Amended claim 1 recites a method of controlling and equalizing audio electrical signals that are to be provided to electroacoustical transducers.

In amended claim 1, at least two different audio electrical signals are provided respectively to at least two electroacoustical transducers. Rocha does not disclose this limitation. In Rocha, the low frequency transducers receive the same signals, as can be seen in Fig. 3 in which the same output from crossover 108 is applied to both low frequency transducers.

In amended claim 1, different audio electrical signals are provided respectively to the electroacoustical transducers to selectively reduce cancellation of acoustic signals. Rocha does not disclose changing the signals provided to the transducers in any manner to affect acoustic cancellation. In Rocha, the signals provided to the two low frequency transducers are the same and are not controlled at all with respect to acoustic cancellation.

The absence of the above mentioned limitations from Rocha makes it impossible to combine Rocha with the secondary reference to render amended claim 1 obvious.

"Moreover, we observe that even if these references were combined in the manner proposed by the examiner, that which is set forth in appellant's claims ... would not result." *Ex parte Bogar*, slip op. p.7 (BPA&I Appeal No. 87-2462, October 27, 1989). "Even if we were to agree with the examiner that it would have been obvious to combine the reference teachings in the manner proposed, the resulting package still would not comprise zipper closure material that terminates short of the end of the one edge of the product containing area, as now claimed." *Ex parte Shwartz*, slip op. p.5 (BPA&I Appeal No. 92-2629 October 28, 1992). "Although we find

nothing before us indicating why it would be desired to combine the references in the manner urged by the examiner, it is clear to us that such a modification by itself would not result in that which is set forth in the claims." *Ex Parte Kusko*, 215, U.S.P.Q. 972, 974 (BPA&I 1981).

That it is impossible to combine the references to meet the limitations of amended claim 1 is reason enough for withdrawing the rejection under 35 U.S.C. §103.

Claims 11, 15, and 19 are patentable for the same reasons stated for claim 1.

All of the dependent claims are patentable for at least similar reasons as those for the claims on which they depend are patentable.

In view of the foregoing amendments, authorities and the inability of the prior art, to anticipate, suggest or make obvious the subject matter as whole of the invention disclosed and claimed in this application, all the claims are in a condition for allowance, and notice thereof is respectfully requested. If the Examiner believes the application is not in a condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at 617-521-7014 to discuss what additional steps the Examiner believes are necessary to place the application in a condition for allowance.

Please apply any other charges or credits to deposit account 06-1050, order 02103-556001.

Respectfully submitted,
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